

IN THE CLAIMS:

Claims 1-36 have been amended herein. All of the pending claims 1 through 36 are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (currently amended) A method for crystallizing epsilon polymorph 2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hexaazatetracyclo[5.5.0.0^{5,9}.0^{3,11}]-dodecane (CL-20), comprising:
preparing a substantially dry CL-20 solvent solution containing an amount of CL-20 dissolved in a CL-20 solvent;
providing a crystallizer containing a CL-20 non-solvent;
adding the substantially dry solvent solution to the crystallizer containing the CL-20 non-solvent to cause precipitation of epsilon polymorph CL-20 crystals by inverse precipitation technique; and
separating the precipitated epsilon polymorph CL-20 crystals from the CL-20 non-solvent and the CL-20 solvent.
2. (currently amended) ~~A~~The method according to claim 1, wherein ~~said~~ preparing ~~of the~~ the substantially dry CL-20 solvent solution comprises substantially drying a wet CL-20 solvent solution containing the amount of CL-20 dissolved in the CL-20 solvent.
3. (currently amended) ~~A~~The method according to claim 2, wherein ~~said~~ ~~substantial~~ substantially drying ~~of the~~ the wet CL-20 solvent solution comprises azeotropic distillation to remove an azeotrope comprising water and the CL-20 solvent.
4. (currently amended) ~~A~~The method according to claim 1, wherein the substantially dry CL-20 solvent solution contains less than 1.5 weight percent water.

5. (currently amended) ~~A-The~~ method according to claim 1, wherein the CL-20 solvent comprises at least one member selected from the group consisting of ethyl acetate, methyl acetate, isopropyl acetate, butyl acetate, tetrahydrofuran, and methyl ethyl ketone.
6. (currently amended) ~~A-The~~ method according to claim 1, wherein the CL-20 solvent comprises ethyl acetate.
7. (currently amended) ~~A-The~~ method according to claim 1, wherein the solubility of CL-20 in the CL-20 solvent is greater than 20 percent weight/volume (g/ml).
8. (currently amended) ~~A-The~~ method according to claim 1, wherein the CL-20 non-solvent is free of halogens.
9. (currently amended) ~~A-The~~ method according to claim 1, wherein the CL-20 non-solvent is free of chlorine.
10. (currently amended) ~~A-The~~ method according to claim 1, wherein the CL-20 non-solvent comprises at least one member selected from the group consisting of hexane, cycloheptane, heptane, octane, benzene, toluene, and xylene.
11. (currently amended) ~~A-The~~ method according to claim 1, wherein ~~said separating~~ of separating the precipitated epsilon polymorph CL-20 crystals from the non-solvent and the solvent comprises filtration.
12. (currently amended) ~~A-The~~ method according to claim 1, wherein the precipitated epsilon polymorph CL-20 crystals comprise particles having maximum diameters of, on average, about 40 μm to about 70 μm .

13. (currently amended) ~~A~~The method according to claim 1, further comprising adding a co-non-solvent ~~to the~~to a wet CL-20 solvent solution or the substantially dry solvent solution, the co-non-solvent comprising at least one member selected from the group consisting of naphthenic oil, paraffinic oil, benzyl formate, and poly(propylene glycol).

14. (currently amended) ~~A~~The method according to claim 13, wherein a weight ratio of co-non-solvent to the CL-20 non-solvent is in a range of from about 5:95 to about 20:80.

15. (currently amended) ~~A~~The method according to claim 1, further comprising preparing the CL-20 from 2,6,8,12-tetraacetyl-2,4,6,8,10,12-hexaazatetracyclo-[5.5.0.0^{5,9}0^{3,11}]-dodecane (TADA).

16. (currently amended) ~~A~~The method according to claim 1, further comprising, subsequent to ~~said~~ separating, washing the precipitated epsilon polymorph CL-20 crystals with at least one member selected from the group consisting of isopropanol and ethanol, and ~~thereafter~~ washing the precipitated epsilon polymorph CL-20 crystals with water.

17. (currently amended) A method for crystallizing epsilon polymorph 2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hexaazatetracyclo [5.5.0.0^{5,9}0^{3,11}]-dodecane (CL-20), comprising:
dissolving an amount of CL-20 into a solution containing a CL-20 solvent and water to form an aqueous phase and a wet CL-20 solvent phase, wherein the CL-20 is dissolved in the wet CL-20 solvent phase;
substantially drying the wet CL-20 solvent ~~solution to thereby~~phase to form a substantially dry solvent solution containing the CL-20;
adding a base to ~~the~~the wet CL-20 solvent phase to neutralize acidic species;
providing a crystallizer containing a CL-20 non-solvent;

adding the substantially dry solvent solution to the crystallizer containing the CL-20 non-solvent to cause precipitation of epsilon polymorph CL-20 crystals by inverse precipitation technique; and

separating the precipitated epsilon polymorph CL-20 crystals from the CL-20 non-solvent and ~~the~~ the CL-20 solvent.

18. (currently amended) ~~A~~ The method according to claim 17, wherein the base comprises at least one member selected from the group consisting of Na_2CO_3 , K_2CO_3 , NaHCO_3 , KHCO_3 , NaOH , and KOH .

19. (currently amended) ~~A~~ The method according to claim 17, wherein ~~said~~ substantial drying of substantially drying the wet CL-20 solvent ~~solution phase~~ comprises azeotropic distillation to remove an azeotrope comprising water and the CL-20 solvent.

20. (currently amended) ~~A~~ The method according to claim 19, wherein the dry ~~CL-20~~ solvent solution contains less than 1.5 weight percent water.

21. (currently amended) A method for crystallizing epsilon polymorph 2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hexaazatetracyclo[5.5.0.0^{5,9}.0^{3,11}]-dodecane (CL-20), comprising:

preparing a substantially dry CL-20 solvent solution containing an amount of CL-20 dissolved in ~~an solvent~~ a solvent;

providing a crystallizer containing a CL-20 non-solvent and seed crystals of epsilon polymorph CL-20;

adding the substantially dry CL-20 solvent solution to the crystallizer containing the CL-20 non-solvent and the seed crystals of the epsilon polymorph CL-20 to cause precipitation of epsilon polymorph CL-20 crystals by inverse precipitation technique; and

separating the precipitated epsilon polymorph CL-20 crystals from the CL-20 non-solvent and the solvent.

22. (currently amended) ~~A-The~~ method according to claim 21, wherein ~~said preparing of preparing~~ the substantially dry CL-20 solvent solution comprises substantially drying a wet CL-20 solvent solution containing the amount of CL-20 dissolved in the ~~CL-20~~-solvent.

23. (currently amended) ~~A-The~~ method according to claim 22, wherein ~~said substantial drying of~~ substantially drying the wet CL-20 solvent solution comprises azeotropic distillation to remove an azeotrope comprising water and the ~~CL-20~~-solvent.

24. (currently amended) ~~A-The~~ method according to claim 21, wherein the substantially dry CL-20 solvent solution contains less than 1.5 weight percent water.

25. (currently amended) ~~A-The~~ method according to claim 21, wherein the ~~CL-20~~ solvent comprises at least one member selected from the group consisting of ethyl acetate, methyl acetate, isopropyl acetate, butyl acetate, tetrahydrofuran, and methyl ethyl ketone.

26. (currently amended) ~~A-The~~ method according to claim 21, wherein the ~~CL-20~~ solvent comprises ethyl acetate.

27. (currently amended) ~~A-The~~ method according to claim 21, wherein the solubility of CL-20 in the solvent is greater than 20 percent weight/volume (g/ml).

28. (currently amended) ~~A-The~~ method according to claim 21, wherein the CL-20 non-solvent is free of halogens.

29. (currently amended) ~~A-The~~ method according to claim 21, wherein the CL-20 non-solvent is free of chlorine.

30. (currently amended) ~~A-~~The method according to claim 21, wherein the CL-20 non-solvent comprises at least one member selected from the group consisting of hexane, cycloheptane, heptane, octane, benzene, toluene, and xylene.

31. (currently amended) ~~A-~~The method according to claim 21, wherein ~~said separating of separating the~~ precipitated epsilon polymorph CL-20 crystals from the CL-20 non-solvent and the solvent comprises filtration.

32. (currently amended) ~~A-~~The method according to claim 21, wherein the precipitated epsilon polymorph CL-20 crystals comprise particles having maximum diameters of, on average, about 40 μm to about 70 μm .

33. (currently amended) ~~A-~~The method according to claim 21, further comprising adding a co-non-solvent to ~~the wet a wet~~ CL-20 solvent solution or the substantially dry CL-20 solvent solution, the co-non-solvent comprising at least one member selected from the group consisting of naphthenic oil, paraffinic oil, benzyl formate, and poly(propylene glycol).

34. (currently amended) ~~A-~~The method according to claim 33, wherein a weight ratio of co-non-solvent to CL-20 non-solvent is in a range of from about 5:95 to about 20:80.

35. (currently amended) ~~A-~~The method according to claim 21, further comprising preparing the CL-20 from 2,6,8,12-tetraacetyl-2,4,6,8,10,12-hexaazatetracyclo-[5.5.0.0^{5,9}.0^{3,11}]-dodecane (TADA).

36. (currently amended) ~~A-~~The method according to claim 21, further comprising, subsequent to ~~said separating~~, washing the precipitated epsilon polymorph CL-20 crystals with at least one member selected from the group consisting of isopropanol and ethanol, and ~~thereafter~~ washing the precipitated epsilon polymorph CL-20 crystals with water.